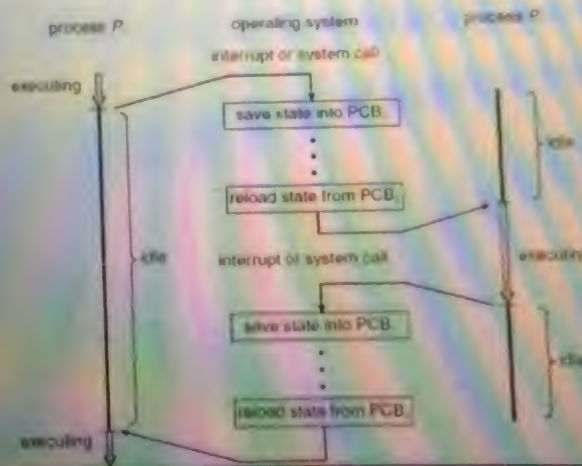


## PART 1

### A. Multiple Choice Questions

(1 \* 5 = 5 Marks)

1. The OS is a resource allocator because:  
A) Execute parallel tasks efficiently.  
B) Controls execution of programs.  
☒ C) Manages all system resources.  
D) All of the above.
2. Bootstrap program is loaded during system start-up to:  
A) Initialize all aspects of system.  
☒ B) Load operating system kernel.  
C) Start task execution.  
D) All of the above.
3. Job scheduler selects which process should be  
A) brought into the waiting state  
B) brought into the terminated state  
☒ C) brought into the ready state queue  
D) None of the above.
4. The following are information associated with each process, EXCEPT:  
A) Program counter.  
B) CPU scheduling information.  
C) Process state.  
☒ D) Synchronization information.



5. The above diagram illustrate  
A) CPU resource allocation.  
B) CPU scheduling.  
☒ C) CPU Switch.  
D) None of the above.





Question 3: Discuss two reasons why use APIs rather than system calls. (4 Marks)

4

1) Its stable--system call differ from platform by platform but by using API easier to maintain migration.

System call provide version number with enhanced features, API we appeared to provide this support, if you call it you will get it but system call won't.

2) easy to upgrade, so if there is new feature <sup>for</sup> the system call ~~can't~~ can't protect it, while if there is upgrade for API can do it easily.

3) provide more useful functions than system call.. as if you make ~~changes~~ <sup>changes</sup> its easier ~~to~~ the replacing the pre-call is ready to implement

Question 4: Explain four of the operating-system services which provide helpful functions to the user. (8 Marks)

8

- ① communication → process ~~exchange~~ info on the same computer or other by network. via memory or message passing.
- ② error detection → aware of errors program. each type of error OS should take appropriate action to ensure correcting, also debugging to find & fix errors & bugs to enhance user & programmer efficiently ~~using~~ using system
- ③ user interface → most of OS have.. varies between GUI & CLI
- ④ program execution → system be able to load program into memory to run the program & execute perfectly. error normally or abnormally indicating errors.



## PART 2

### ESSAY ANSWER SHEET

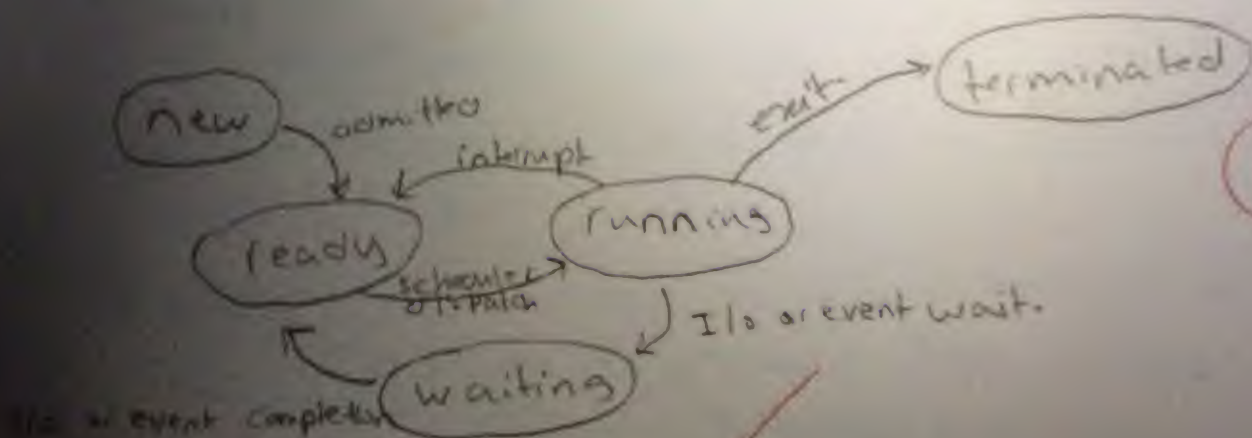
Question 1: List and discuss the computer system four components.

(4 Marks)

4

- 1- Hardware → "Memory, CPU, I/O devices"  
provide basic resources.
- 2- Operating system → act like intermediaries between Hardware & user. use hardware resources to control & coordinate users & app. programs.
- 3- application program → use the resources to make decisions, prevent error. like video game, DB system, compiler, browser.
- 4- Users → interact with the system & provide output & finish the goals.. like other computer, people, machines..

Question 2: Draw a diagram showing the five process states with its relations. (5 Marks)



5



Question 5: Define the cooperating process and list three advantages. (4 Marks)

- It affects or be affected by other processes, systems & provide data sharing.
- Advantages:
  - 1) share information.
  - 2) modularity.
  - 3) convenient & communication.
  - 4) economy of scale.

4

Question 6: Explain when parent process may terminate execution of children processes.

(3 Marks)

- parent provide the child then it makes tree diagram.
- both share resources & execute ~~after~~ parents after child finish execution. because from the lower to higher level.
- If the child made wrong or less efficiency, the parent may finish on it & complete complete it.

1

- parent & child execute both can currently ~~to~~, child share subset resource of parent, child duplicate <sup>from parent</sup> & has a program to ~~load to~~ X